CURRENT LITERATURE.

BOOK REVIEWS.

Index to Saccardo's Sylloge.

A COMPLETE index to Saccardo's great work on fungi has been compiled by Dr. Sydow.[1] The first half of the volume was issued in advance, and was noticed in this journal for last May. The index is divided into five parts: the first part includes species growing on living or dead parts of plants (858 pages); second those on living or dead parts of animals and man (14 pages); third those found on artificial substrata, such as paper, bread, etc. (30 pages); fourth those on earth, stones, etc. (137 pages); and fifth those that are fossil (13 pages). The bacteria are excluded from the index. The alphabetical arrangement is by genera, with species under each genus. The kind of substratum (hosts being mentioned by name), and the geographical distribution are also given in the same line.

The index is almost invaluable to one who uses the work much, and is a fitting complement to the eleven volumes of specific descriptions. The typography is admirably suited to ready reference.—J. C. A.

The bacteria.[2]

THE author of this valuable addition to bacteriological literature is well known to English readers through the translation of his *Introduction to Practical Bacteriology*, as well as through his original contributions to our knowledge of bacterial structure and function. The present work is an exceedingly useful and usable compilation. It deals with such questions as the relationship of bacteria to other groups of organisms, and the orderly arrangement possible within the group itself; with the morphology and chemistry of the cell membrane, the structure, chemistry and reaction to stain of the cell contents, the problematic cell nucleus and *Centralkörper;* and

[1] SACCARDO, P. A.—Sylloge fungorum omnium hucusque cognitorum. Vol. XII; Index universalis et locupletissimus generum, specierum, subspecierum, varietatum hospitumque in toto opere (vol. I–XI) expositorum. Auctore P. Sydow. Roy. 8vo. pp. 1053. Berolini: Fratres Borntraeger. 1897.

[2] MIGULA, DR. W.—System der Bakterien. Handbuch der Morphologie, Entwickelungsgeschichte und Systematik der Bakterien. Erster Band. Allgemeiner Teil. Mit 6 Tafeln. Jena: Gustav Fischer. 1897.

with the question of bacterial motility including all the vexed and difficult problems connected with the origin, distribution and significance of the flagella. There are important chapters upon growth and division and the formation of cellular unions or colonies, and upon spores and gonidia, and pleomorphism and variability. The "general part" comprised in the volume before us, and presumably to be supplemented some day by a "special part," concludes with an interesting section upon the biological characteristics of bacteria, in which are discussed such phenomena as pigment production, anaerobiosis, parasitism, phosphorescence, the action of light and temperature, and the special metabolic activities displayed by the sulphur, the iron, and the nitrogen bacteria. The merit of the whole treatise is that it brings together the information obtained through the researches of the past few years and presents it in a careful and lucid way.

The author's system of classification is already well known from its appearance something over a year ago in *Die Natürlichen Pflanzenfamilien* (Lfg. 129).[3] It is simple and consistent, and at least does not include hypothetical genera to be hereafter discovered for the delectation of the scientific imagination.

It may be questioned whether our author has made the best use of his space in threshing over the old facts of the historical development of classification and nomenclature in the same thoroughgoing manner in which it has already been done. It must be confessed one is a little weary of seeing in monograph and text-book the same old "systems" trotted out for inspection again and again. The system of de Toni and Trevisan, for example, has certainly not proved such a help to bacteriology that we are justified in keeping it constantly before our eyes. Such systems are the flotsam and jetsam of progress, and if they are fain to sink of their own weight should be allowed to do so. The fetish of completeness, however, is conspicuous throughout the book, and much valuable space is sacrificed to it. The irrelevant and the trivial do not deserve a place by the side of the significant and essential, and the writing of such a book as this should presuppose the selection and sifting of material.

The author's treatment of the cell nucleus question is, on the whole, discriminating and fair. He refuses to accept Bütschli's statements as to the existence of a *Centralkörper* in bacteria, and denies that bacteria possess a true cell nucleus "like the cell nucleus of higher plants," but is inclined to look upon the metachromatic granules observed in the cell contents as a sort of primitive nuclear substance.

Migula takes germination as the criterion of a spore, a process which in a true spore differs essentially from the proliferation of a vegetative cell, and on this ground gives no credence to the existence of arthrospores. He does

[3] See BOT. GAZ. **21**: 243. Ap. 1896, and American Naturalist, June 1896.

not lay so much stress as many recent writers have done upon the claims for extensive pleomorphism and variability among bacteria, and seems not to be acquainted with some of the available data in this field.

The index of the book is somewhat inadequate for a compilation of this character, and might be enlarged to advantage. The most serious typographical error that we have noticed is the mistake in numbering and placing Plates IV and V, so that each plate is faced by the description of the other. But when all shortcomings are taken into consideration, it still remains true that Dr. Migula's work is a distinct aid to all workers in bacteriology, and should give an impetus to the study of the purely scientific aspects of the subject.—E. O. J.

MINOR NOTICES.

THE PROCEEDINGS of the tenth annual convention of the Association of Agricultural Colleges and Experiment Stations has recently been issued in Bulletin no. 41 of the Office of Experiment Stations. They contain only one botanical paper, a vigorous presentation of the place of vegetable physiology in the curriculum of the agricultural colleges, by Professor Geo. E. Stone, of Amherst, Mass. This article, while addressed to agricultural colleges, is equally applicable to the conditions existing in most of the higher educational institutions in the United States, and deserves a wider reading than its form of publication is likely to bring. The author justly states that "there has been no branch of botany so neglected in our country as the physiology of plants." A very general awakening, however, has been recently experienced. As a pedagogical subject, nevertheless, it is still in a very unsettled condition, and it has been called upon to meet the damaging influence of specialists in other lines of activity, who permit inertia and mistaken notions to influence their attitude toward the new aspirant for position. The following sentences, quoted from the article, are so well said, and so much in need of being said, that they are reproduced here, and it is to be regretted that room is not available for more.

"The necessity of defining a branch like physiology is in itself a reflection on our botanical development, especially when there are so many excellent text-books treating physiology in a distinctly characteristic manner. Nevertheless such misconsceptions exist, and I feel justified in calling attention to them. There has never been any question as to what physiology implied among the animal physiologists; neither has there been any among European vegetable physiologists. But right here in our American agricultural institutions we have had professors of botany who did not, and do not today, seem to know exactly what ground this subject covers. One institution that I have in mind has advertised for years a thorough and complete equipment for work in vegetable physiology, and yet this very same institu-